GrummanWorld

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Space Systems To Help Build Space Tug

NASA picks TRW-led group to build Orbital Maneuvering Vehicle for hauling satellites in space

Grumman is getting into the tug business.

Not the making of those stocky work boats that are so familiar along the docks of New York harbor and other seaports — as a subcontractor to TRW, Grumman's Space Systems Division will help build the first space tug, the Orbital Maneuvering Vehicle (OMV).

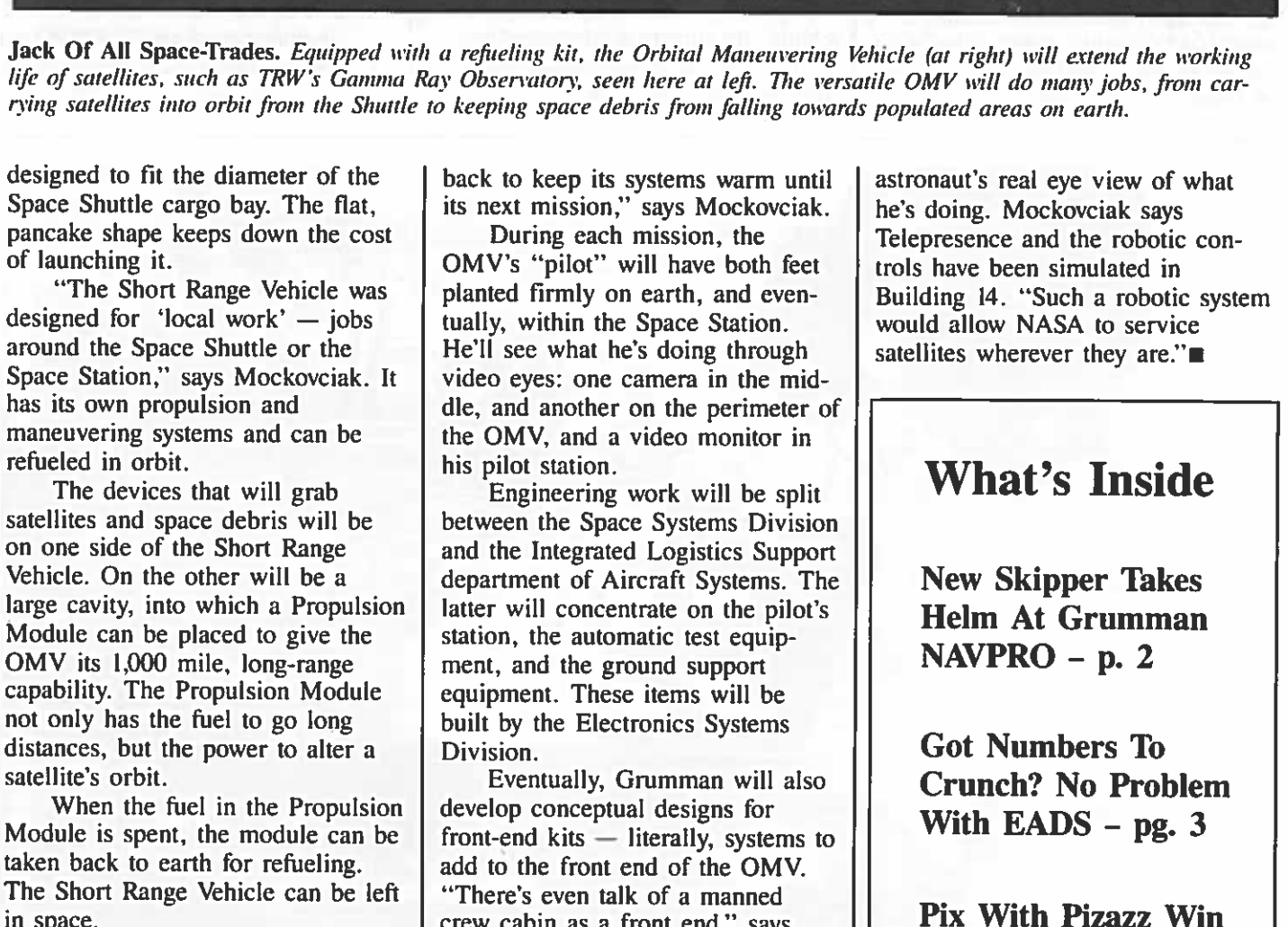
The remotely operated OMV will be used with the Shuttle and the Space Station to deliver and retrieve orbiting satellites. Initially, it will be controlled from a ground station, and later from the Space Station.

TRW's Space & Technology Group recently won a $200 million NASA contract to build the OMV. As a subcontractor to TRW, Grumman will build structures for the propulsion module, the pilot console (which is used to control the OMV from the ground), automatic test equipment, and mechanical ground support equipment.

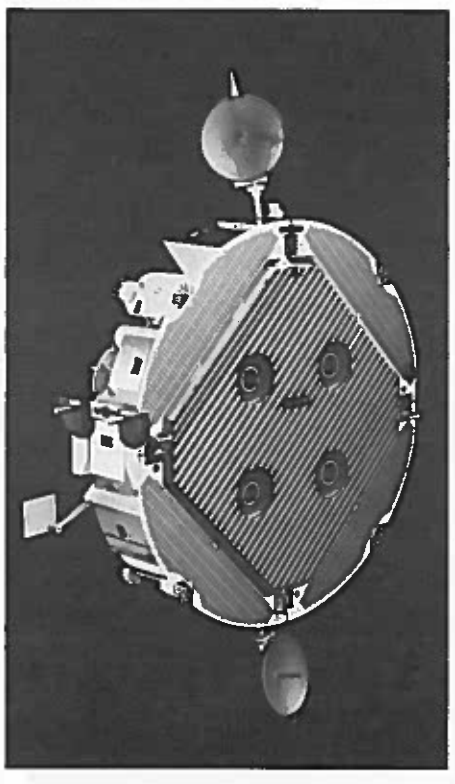
Spar Aerospace Ltd., Weston, Ontario, Canada, the builder of the remote manipulator arm of the Space Shuttle, will also play a major role in building the OMV.

"It's going to be a real workhorse," says John Mockovciak, OMV program director for Grumman. The OMV will also redefine what a workhorse looks like.

The OMV is a two-part vehicle, and is about the size of the Lunar Module descent stage. The core unit is the 14.5-foot diameter, 4-foot thick Short Range Vehicle. It was designed to fit the diameter of the Space Shuttle cargo bay. The flat, pancake shape keeps down the cost of launching it.



Jack Of All Space-Trades. *Equipped with a refueling kit, the Orbital Maneuvering Vehicle (at right) will extend the working life of satellites, such as TRW's Gamma Ray Observatory, seen here at left. The versatile OMV will do many jobs, from carrying satellites into orbit from the Shuttle to keeping space debris from falling towards populated areas on earth.*



Grumman's Part. *The square insert in the center of the Orbital Maneuvering Vehicle is a Propulsion Module. It will have a number of different configurations to give the OMV various working ranges. Grumman Space Systems will build this structure.*

"The Short Range Vehicle was designed for 'local work' — jobs around the Space Shuttle or the Space Station," says Mockovciak. It has its own propulsion and maneuvering systems and can be refueled in orbit.

The devices that will grab satellites and space debris will be on one side of the Short Range Vehicle. On the other will be a large cavity, into which a Propulsion Module can be placed to give the OMV its 1,000 mile, long-range capability. The Propulsion Module not only has the fuel to go long distances, but the power to alter a satellite's orbit.

When the fuel in the Propulsion Module is spent, the module can be taken back to earth for refueling. The Short Range Vehicle can be left in space.

Like the seagoing tug that only goes to dry dock to have barnacles scraped from its hull, the Short Range Vehicle could spend most of its 10-year life in space. It might return to earth for modification or repair — but then again, it might never need to.

"It could remain in space, dormant, using the solar cells on its back to keep its systems warm until its next mission," says Mockovciak.

During each mission, the OMV's "pilot" will have both feet planted firmly on earth, and eventually, within the Space Station. He'll see what he's doing through video eyes: one camera in the middle, and another on the perimeter of the OMV, and a video monitor in his pilot station.

Engineering work will be split between the Space Systems Division and the Integrated Logistics Support department of Aircraft Systems. The latter will concentrate on the pilot's station, the automatic test equipment, and the ground support equipment. These items will be built by the Electronics Systems Division.

Eventually, Grumman will also develop conceptual designs for front-end kits — literally, systems to add to the front end of the OMV. "There's even talk of a manned crew cabin as a front end," says Mockovciak.

One front end kit has manipulator arms that would be placed in front of the OMV. The arms send feedback to the pilot's control system on earth for a long-range sense of touch.

The kit will also have an enhanced video system called "Telepresence" to give the pilot an astronaut's real eye view of what he's doing. Mockovciak says Telepresence and the robotic controls have been simulated in Building 14. "Such a robotic system would allow NASA to service satellites wherever they are."■

What's Inside

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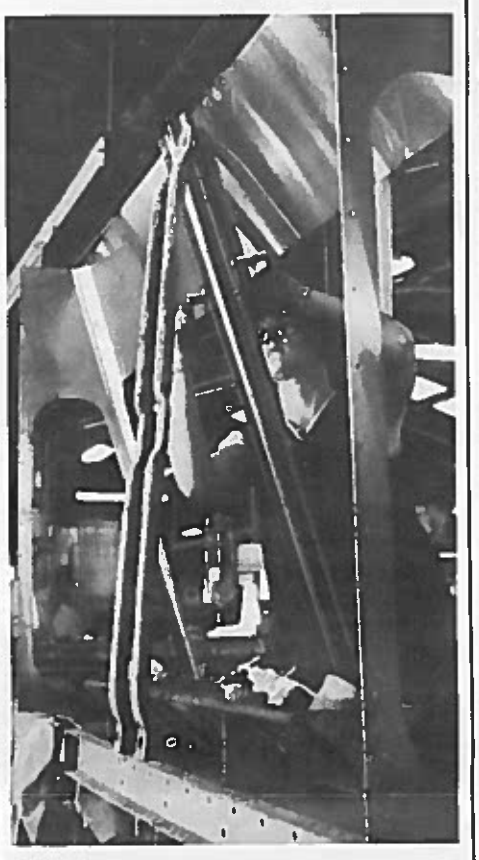
Montgomery Keeps Trucking While Getting Ready For LLV

Allied's shift of Olson truck assembly work from its Montgomery, Pennsylvania, plant to nearby Montoursville has been completed, without missing a beat in the production schedule.

The Montgomery plant is the site of Allied's new Long Life Vehicle Division's production facility. Grumman won the LLV postal vehicle contract earlier this year. The plant is now being gutted and expanded to accommodate an automated production line. By mid-1987, Grummanites will be making 75 LLVs a day in Montgomery.



New Home, For Awhile. *Grummanites such as Kathy Miller, here building a windshield assembly, expect to be in the former Susquehanna Warehouse building in Montoursville for about a year.*

Only the paint shop still remains at Montgomery, and it too will move to Montoursville in the upcoming weeks. Montgomery's production schedule has been reduced from 13 to eight Kurbmaster trucks a day.

"The folks kept producing eight vehicles a day even while moving everything to Montoursville," says Bill McLean, LLV vice president. "We're very proud of the way everyone responded to the move." They may even go to eight and a half in the smaller quarters at Montoursville.

McLean says they were able to keep to the schedule by building a backlog of parts and assemblies, then moving each work area separately — subassemblies, major assemblies, jig and final assembly. The whole process took a month.

To make the transition to LLV production smoother, Allied's plant in Mayfield, Pennsylvania, took on some of the work.

Located northeast of Scranton, Mayfield had been dedicated to truck rebuilding and building special order vehicles such as Servmods. Now the Grummanites there are also building six Kurbmasters a day and plan to increase that to eight.

Once LLV production begins, Montgomery will only produce that vehicle. Its current Kurbmaster production will be spread among the other Allied facilities. ■

Tradition. *Rear Adm. Richard Friichtenicht (R), NAVAIR deputy commander for Program Support, salutes outgoing NAVPRO commanding officer Capt. James Charles Jr. Capt. Wendell Brown (L) now leads the plant representative's office at Grumman. (Photo by Jim Wagner)*

New Skipper Takes Command Of Naval Plant Rep Office

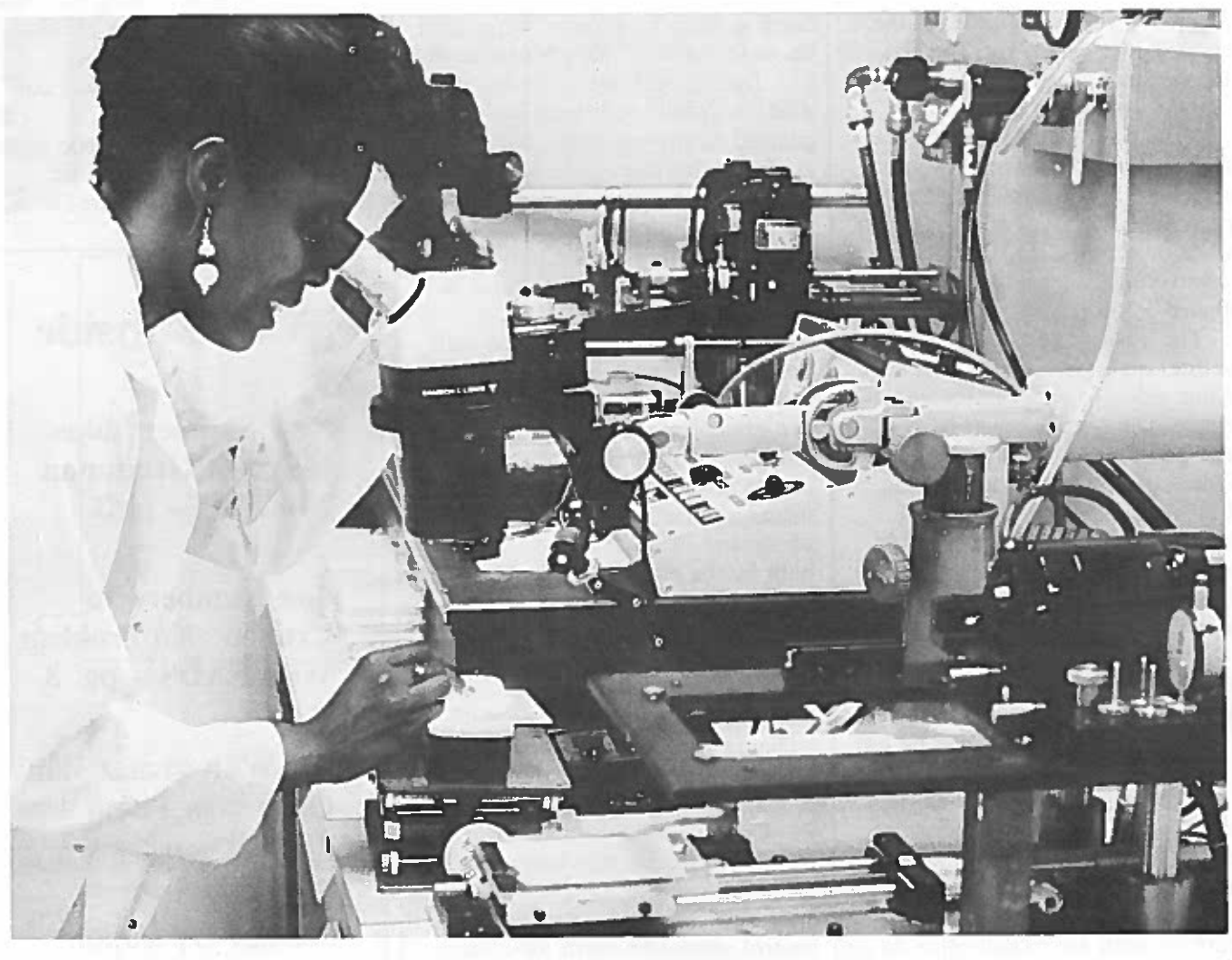
At a change of command ceremony held in Calverton, Long Island, on June 27, Navy Capt. Wendell Brown took command of the Naval Plant Representative's Office (NAVPRO) at Grumman.

He replaces Capt. James Charles, who had been at NAVPRO's helm since 1984. The NAVPRO crew is responsible for the administration of government contracts, the inspection of government material, and aircraft acceptance.

Capt. Brown, a Class of '65 graduate of the Naval Academy, is a naval aviator who made two combat deployments to Southeast Asia.

He served as F/A-18 program manager's representative at McDonnell-Douglas and, from 1982-1985, as Phoenix Missile coordinator at the Naval Air Systems Command's headquarters.

Before taking the NAVPRO post he was a student at the Industrial College of the Armed Forces.



Checking Chips. *Deborah Carmichael, a senior engineering aide in the Microelectronics Lab in Bldg. 14, Bethpage, inspects a substrate. It's made of alumina, the natural form of aluminum oxide. The substance is used for light bulbs, sandpaper, and ceramics. Here, alumina is the foundation for the microcircuits of an integrated circuit chip. (Photo by Jim Wagner)*

Number, Please

The Fall 1986 edition of the Grumman Telephone Directory will be published later this year. In order to update the directory, Telecommunication Services is sending telephone directory cards to all Grummanites. If your extension or other information has changed, fill out the card and mail it to Telecommunications Services, C05-GHQ, no later than July 24. If the information on the cards is correct, fold it into an airplane and fly it to the nearest wastebasket.

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Got Numbers To Crunch? EADS Says, 'No Problem'

HUNTSVILLE, Alabama — Thanks to the Engineering Analysis and Data System (EADS), Dr. Greg Wilson can see the results of his research in a fraction of the time it used to take.

EADS is a highly sophisticated computer system for some 2,200 engineers and scientists at NASA's Marshall Space Flight Center in Huntsville. Its "heart" is a Cray X/MP supercomputer. Grumman's Data Systems Division recently completed the installation of EADS as part of a $50 million contract.

As chief of Marshall's Atmospheric Physics Branch, Wilson uses EADS several times a day. One of the phenomena his branch studies is the structure and movement of atmospheric fluid — essentially, air and water vapor. Their research has bearing on the design of both space vehicles and sensors that would scan the entire earth and atmosphere.

To gain a better understanding, Wilson and his team of scientists and engineers run computer simulations. "A 24-hour simulation over a portion of the globe, using space measurements, used to take one week on our previous system," says Wilson. "Through EADS, it takes five to 15 minutes. And many experiments simply could not be done before we got EADS — particularly those involving image processing."

The branch is also conducting a two-month study of atmospheric dynamics, precipitation, and light -ning. Measurements over the surrounding four-state area are monitored from an EADS-supported computer center down the hall from Wilson's office.

Once the data is collected, with the help of EADS, the scientists will pore over this data time and again. "EADS is an absolutely vital resource," Wilson says. "We can't do this type of work without it."

All of the lab groups at Marshall had their own computer systems, which the Data Systems team linked to EADS. EADS includes two large IBM mainframe computers, which function as front end processors, and a smaller IBM mainframe to control the network and the system's output. The front-end processors route work to the Cray X/MP.

The Cray does scientific "number crunching" much faster than a conventional computer — and that will be a boon to productivity.

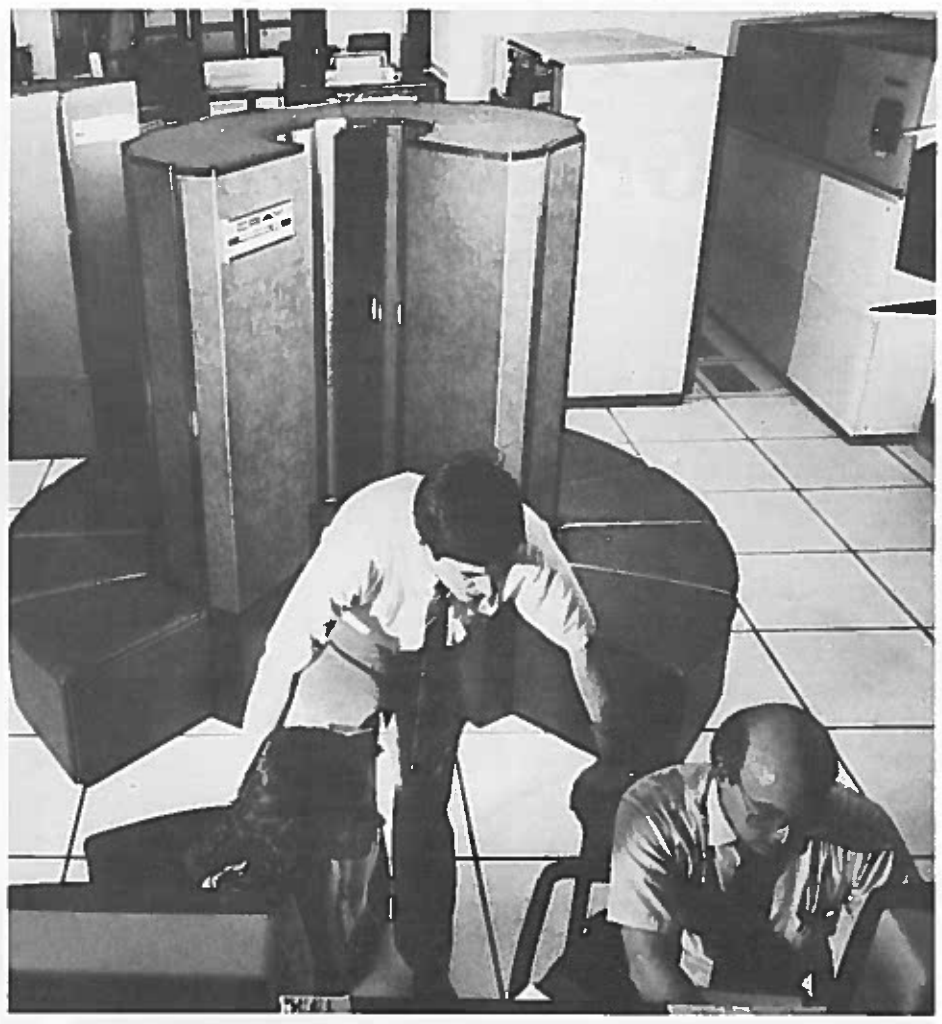
"A typical task on our old system took 100 hours to run," says Jay Foster, director of Institutional and Program Support for Marshall. "As a stopgap measure, we segmented tasks into 10 10-hour problems. The drawback was, when one task group finished its part, it had to manually pass the results to the other nine. You couldn't be absolutely sure you covered all your bases."

"Now, that same job can be run in minutes," he says.

Seven geographically scattered laboratory groups are linked to EADS — there are 1,400 computer terminals in all. The Atmospheric Physics Branch is part of the Systems Dynamics Lab. The others are the Information and Electronics Systems Lab, Materials and Processes, Space Sciences, Structures and Propulsion, Systems Analysis and Integration, and a Test Lab.

Their research is tied to such programs as the Space Shuttle, space telescope, Spacelab, Spacelab payloads, and special projects — such as development of a 100-kilometer tether that will be towed by the Shuttle and gather atmospheric data.

"However, chief among Marshall's responsibilities is the propulsion system of the Space Shuttle — the solid rocket boosters, the main engine, and the external fuel tank — and the on-board power systems on the Space Station," says John Lynn, director of Marshall's Computer Services Office. "Much of the investigation of the January 28 Shuttle disaster was conducted at Marshall."



Vital Resource. *Grummanite Dale Robertson (standing) does some last minute work on EADS with Diane Tolbert and Fred Flagg of Cray. (Photo by Bob Settles)*

In fact, EADS' first assignment was to assist on this investigation; its image processing subsystem was used for analysis of photos taken of the tragic explosion.

The type of number-crunching problems that EADS will typically handle involve thermal, structural, and optical analysis, and system dynamics. "We rely on a variety of very large computer models here," says Lynn. "They're used, for example, to study the combustion process. It's less costly to run a simulation than to take an actual power system and do tests.

"The results of those simulations can be studied in great detail using EADS," he continues.

The system is designed to allow Marshall to keep up with technological advances. Marshall can add or replace components as more sophisticated ones become available from computer vendors.

"If we're going to stay in the forefront of space research, we need to keep up to date," says Foster. He points out that while NASA research centers have supercomputers, Marshall is the first engineering center to acquire one.

He's also pleased with how rapidly the people at Marshall have taken to the system. Grumman developed and has conducted three training courses about EADS.

"Our users aren't reticent — if they don't like something, they'll speak out," says Foster. "We've only heard good comments about EADS."■

All Smiles. *Marshall's Director, Dr. William Lucas (third R), cuts the ribbon at EADS acceptance ceremony. Holding the ribbon are (L-R) Jay Foster, Marshall's director of Institutional and Program Support; Grumman Executive Vice President John O'Brien; Jim Kingsbury, Marshall's director of Science and Engineering; and Bob Myers, president of Grumman Data Systems Division.*

High-Tech Takes A Bow

On June 20, a ribbon-cutting ceremony was held at Marshall Space Flight Center to mark the installation of EADS.

John O'Brien, executive vice president and president-elect of Grumman Corporation, commented that EADS was the Data Systems Division's first major contract at Marshall.

"EADS demonstrates what good people can do when given the opportunity to apply their energies, their technical skills, and their desire for excellence to a project of major importance to their organization, and on a larger scale, to their country," he remarked. He also thanked IBM and Cray corporations for their work as subcontractors on the program.

Bob Myers, president of Grumman Data Systems, presented a commemorative plaque to Dr. William Lucas, director of Marshall. "The EADS system is clearly going to be an excellent tool — both for NASA to use, and for us to learn from," he said. "We're very happy to share this occasion with you today."

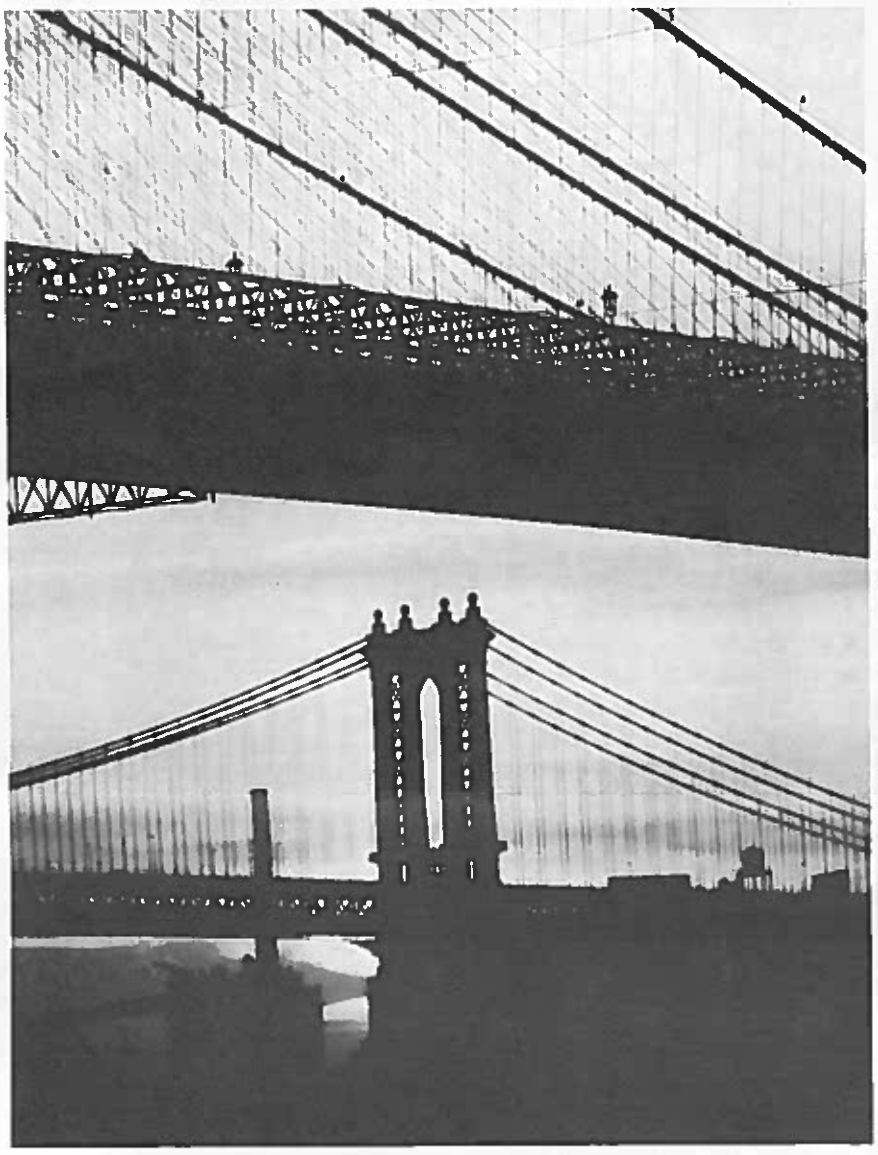
Dr. Lucas retires this summer, and was instrumental in the acquisition of EADS. "For an oldtimer such as myself, who started working on rocket systems more than 30 years ago, when our computer was the slide rule, it's just tremendous what has happened with this technology," said Lucas. "Not only will EADS increase productivity — it's going to enable us to do some things we've only dreamed about. I commend you for the good work you have done."

Dozen Pix With Pizazz Win Grumman Photo Contest

Eleven Grummanites won the photo contest which drew 150 photographs from around the company.

This week, their 12 winning photographs — blown up to 20 x 30 inches — will be displayed in corporate headquarters on the lower level across from the theatre. The enlargements will be given to the winners.

The winners are: Rich Breunig, David Carrasco, Tony Germano, Herb Goldberg, Al Heisler, George Hempel, Gerry Kraus, Helen Rolli, Chuck Sewell, Mae Sprouse, and Joseph Volpe.



Brooklyn's Beauty. *Al Heisler took this photo of the Brooklyn Bridge in March, 1986. To get the right effect, Heisler, a tool designer in Warehouse 6, Bethpage, used a Pentax 35mm camera and set his zoom lens at 210.*

Tradition. *During the Korean War, Joseph Volp Fukuoka, Japan, in 1952. Volpe, a security mo manual Argus 3-C 35mm camera, set at f:8.*

Fish And Chicks. *Scuba diving is one of Chuck Sewell's favorite pastimes. Grumman's Chief Test Pilot used a Nikon underwater camera to get this shot (above L) of a diver in Bonaire, Netherlands Antilles. George Hempel took the color shot (above R) of a chick and a toy duck with a Minolta camera at f:14. He is a manufacturing engineer in Building 2, Bethpage.*

Hang On Tight. *Contrasting emotions are apparent in this color shot at Adventureland in Farmingdale, L.I. David Carrasco captured this moment with an automatic Canon A-1. He is a subcontract project manager, Building 9, Melville.*

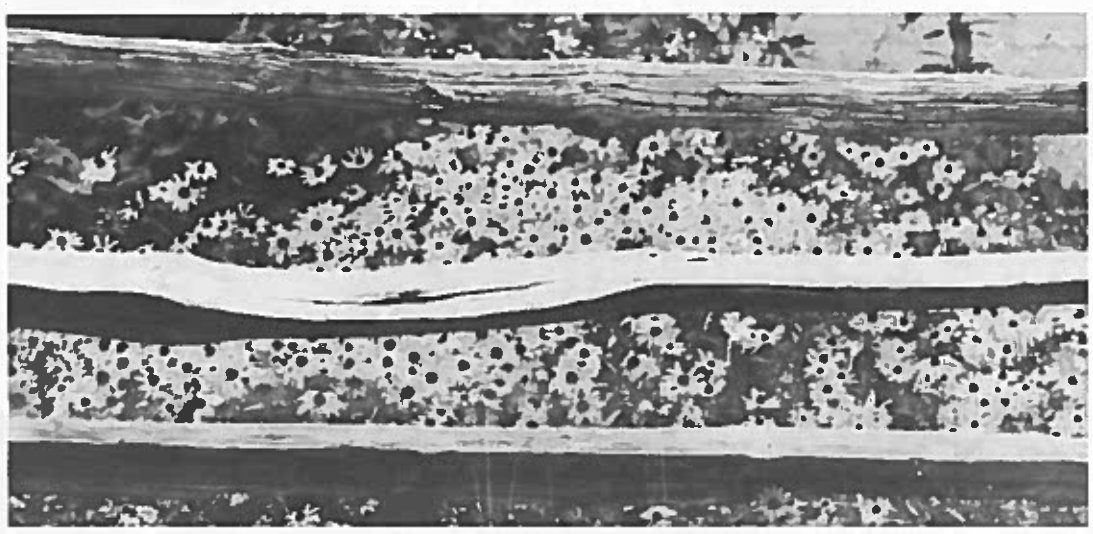
Alone At Last. *Professional photographer Rich Breunig of Building 25, Bethpage, took this picture of a loon. He used a Nikon F2 at f:5.6 and a 200mm lens.*

Vac *Gol jum 2, I Dev Hav she*

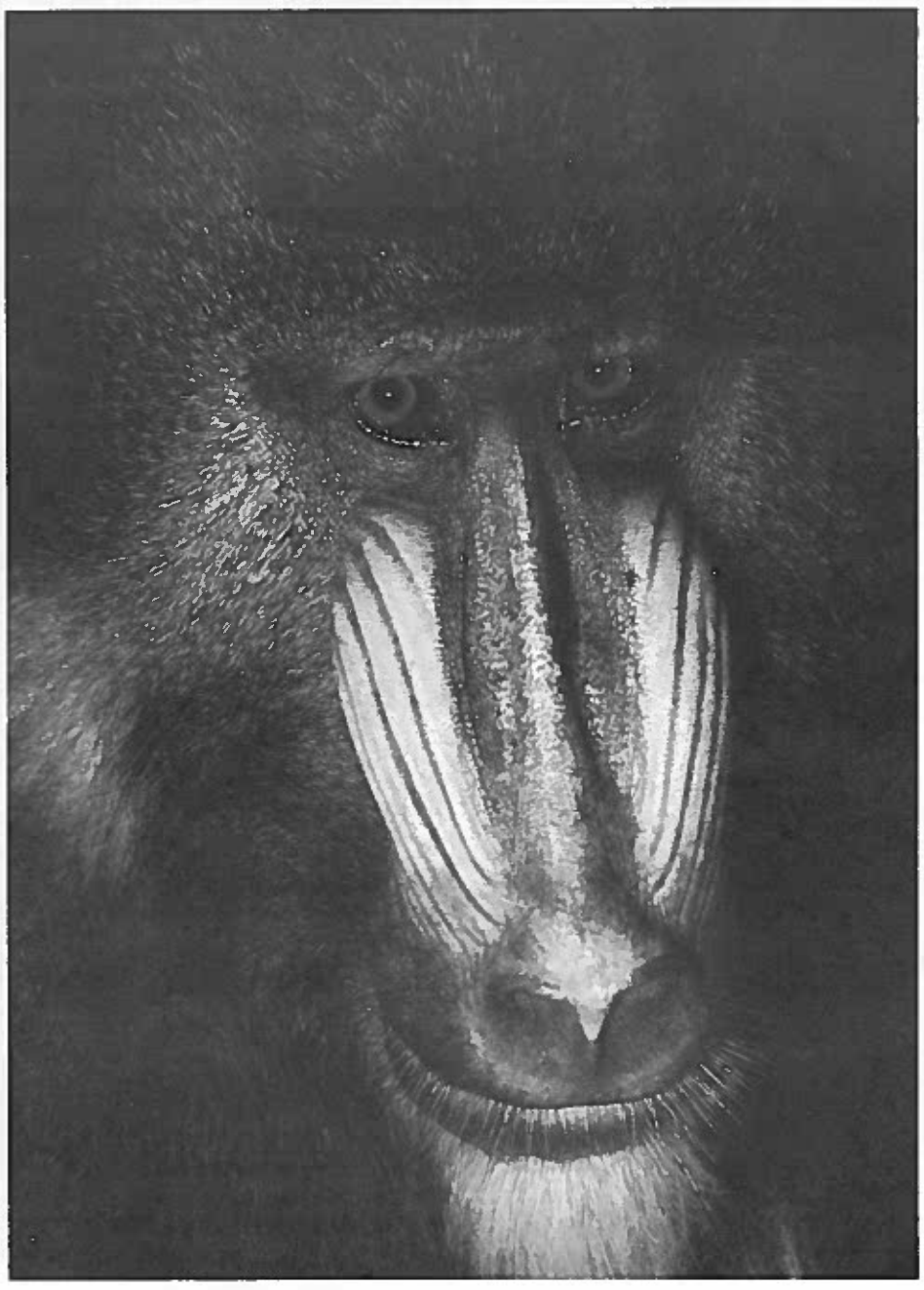
napped this shot at a religious parade in
r in Building 107, Melville, L.I., used a

Hybrids. *In this color photo, the flowers appear to have blue outer petals and centers, and orange inner petals. But it's a trick. The orange petals are actually white. In processing this color slide, Tony Germano used a diazochrome technique to get the change of color. The traffic manager for NAVPRO in Building 35, Bethpage, used a Nikon 35mm camera set at f:11.*

n Shots. *While in Acupulco, Mexico, Herb*
rg used a Cannon FTB camera to capture this
hot (above). He is a Navy inspector in Building
page. Below is Mae Sprouse's photo of
ation Trail in Volcanos National Park in
. A systems analyst in Building 245, Holtsville,
d a Konica 35 automatic.



Sunny Meadow. *Sands Point Preserve in Sands Point, L.I., is a haven for daisies. Helen Rolli, an administrative secretary in Building 5, Bethpage shot these bright yellow flowers last summer. She used an automatic Nikon EM 35mm camera.*



Photogenic Faces. *Animals are his forte, says Gerry Kraus. The photo of the Shih Tzu (above) was taken at a dog show at the Nassau Coliseum on Long Island last winter. Kraus used a Canon F-1 camera, set at f:11, and a flash. He used the same technique for his shot of the mandrill (L). He used a 100mm macro lens to shoot through the glass at the Bronx Zoo in the fall of 1984. Both shots are black and white.*

People

Heroic Action

Lately, saving lives has become a habit among Grummanites.

Joe Caballero and Pete Luna, assemblers at Grumman Olson in Tulare, California, saved a man who was trapped in a burning pickup truck. They pulled him from the smoke-filled cab just seconds before the vehicle was engulfed in flames.

Their heroic act occurred just months after Tulare's Ron Collins, heading home from work, saved another man's life.

On the morning of Saturday, May 10, Caballero and Luna were driving along a street and saw smoke ahead. Then they spotted a burning truck, its left side jammed against a burning house.

They heard calls for help, and Luna searched the house to see if someone was inside. "I was so nervous," Luna remembers. "I kept hearing things exploding."

He couldn't find anyone. One neighbor, a retired fireman, arrived and began searching, too. The neighbor then realized that the driver was still inside the burning truck.

"When we opened the door to the cab we couldn't see him because of the smoke," Caballero remembers.

But the three men got him out. "We took off after the fire department got there," says Luna. The neighbor was interviewed for the story in the local paper, but no one got the names of the two Grummanites. "We were just two guys passing by who helped him out," says Luna.

Laurie Coker is another special Grummanite. Coker, a senior electrical installer on the F-14D Mockup in Calverton, Long Island, rescued a two-year-old and the child's unconscious mother from a burning car.

Coker was awakened by a crash and the sound of a child crying. She looked outside, and saw a car had crashed into a tree near her house. There were flames under the hood.

Coker called 911 for help, then ran outside. She lives on a desolate country road in Manorville, Long Island; there are no close neighbors.

V.I.P. *Bill Trillo (L), vice president of Calverton Operations, presents Laurie Coker with plaque. Looking on is Roy Montana, Calverton's deputy director.*

Dynamic Duo. *Pete Luna (L) and Joe Caballero of Grumman Olson's Tulare, California, plant are real heroes, not make-believe. They saved a man who was trapped inside a burning truck. (Photo by Mike Germaine)*

"I felt I had to do something — it might be too late if I waited for the fire department," she said. "I have a 16-year-old son. I remember thinking that if something terrible ever happened to him, I'd want someone to act quickly to get him to safety."

The passenger door was jammed shut from the impact. So, to rescue the child, Coker first had to get the unconscious mother out. "She was slumped over the seat, with her foot pinned under one of the pedals," she recalls. "After releasing her foot, I dragged her to safety, all the while praying to God to give me the strength and courage to go back to the burning car."

As she was doing so, a motorist named George Ehrman stopped to lend a hand. Moments after they got the child to safety, the car's gas tank exploded.

Police officer Michael Martinez — the first policeman at the scene — credited Coker and Ehrmann with saving two lives.

At work the next day, Coker only told a few people about the incident. But word got around. In April of this year, Coker and Ehrman received the Suffolk County Police Department's Public Service Award. Coker was also presented with a plaque by Grumman's Aircraft Systems Division.

The award plaque reads, in part, "You are to be commended for your fine example of Americanism and moral and physical courage."■

Merit Award

Jerry Krassner, head of the Optical Physics Lab in Grumman's Corporate Research Center, has received the certificate of merit from the National Security Industrial Association.

The presentation was made at the association's awards meeting, held recently at Johns Hopkins University's Flight Physics Lab in Baltimore.

Krassner received the award for his involvement with an association subcommittee on airborne infrared tracking systems. He started out as a subcommittee member and later took over as chairman. The subcommittee recently made its recommendations to the Navy on how to proceed in this area of high technology.

A Gift Of Life

Bill Harwood of Production Supervison, Bethpage Building 3, has received an honorary pin for donating 16 gallons of blood over the years.

Harwood began donating blood in 1952. His son, Mike, fell and cut his arm badly, requiring hospitalization.

Harwood was new at Grumman at the time. He paid for the blood his son received, not knowing then that Grumman had a plan to pay for hospital blood services. Later, he was reimbursed by Grumman for the expense, and, as a sign of gratitude, began donating blood.

In 1981, son Mike joined the Grumman family — and he's also a regular blood donor.

Champion Donor. *Peter Goldsmith, director of the 1986 Grumman Blood Program, presents Bill Harwood with a pin honoring him for donating 16 gallons of blood over the years.*

Don't Be Shy

We are always looking for scoops about Grummanites who have been honored by their communities, civic groups, or professional societies.

If you know a fellow worker who deserves recognition in *Grumman World*, drop us a line: C14-05; or call Ext. (111) 58999.

Obituaries

Ronald J. Folchetti of Technical Presentation Services, Bethpage, Aircraft Systems died June 6 at the age of 46. He had been with the company since 1963 and resided at 12 Pinaire Ave., Farmingdale, N.Y.

Retiree Obituaries

Ralph A. Amerman of 122 Broadway Rockville Centre, N.Y., died June 11, 1986. He retired in 1975.

Nellie Ardito of 98 Ave. E., Holbrook, N.Y., died June 2, 1986. She retired in 1978.

Leo A. Chazey of 1301 Blossom Lk. Cir., Holiday, Florida, died March 21, 1986. He retired in 1971.

Rafael M. Cruz of 66 Gordon Ave., W. Babylon, N.Y., died June 13, 1986. He retired in 1968.

Martin E. Gack of 2361 Willow St., Wantagh, N.Y., died June 19,1986. He retired in 1977.

Leo A. Geyer of 49 Pineland Rd, Hilton Head, South Carolina, died June 5, 1986. He retired in 1975.

Theresa Grinkovitch of 3 Willow St., Bethpage, N.Y., died June 8, 1986. She retired in 1983.

Joseph H. Mack of 1367 NE Cedar St., Jensen Beach, Florida, died June 18, 1986. He retired in 1980.

Gladys C. Meyer of 172 Fire Island Ave., Babylon, N.Y., died June 12, 1986. She retired in 1978.

Charles F. Myers of 2369 S. Seamens Neck Rd., Seaford, N.Y., died June 17, 1986. He retired in 1978.

George W. Rappold at Box 494 Rt. 2, Galax, Virginia, died June 18, 1986. He retired in 1970.

Stanley Rosicki of 940 N. 1st St., New Hyde Park, N.Y., died June 14, 1986. He retired in 1981.

William C. Wright of 56 Buttonwood La., Naples, Florida, died June 21, 1986. He retired in 1970.

Personals

My family and I wish to extend our sincere appreciation and thanks to my co-workers, friends and ESO for their kind expressions of sympathy during the recent loss of my father. **Celeste Valente**

To my friends, co-workers and ESO, thank you for your get well wishes during my recent surgery and illness. **Harry Saul**

My family and I wish to thank all of my friends, co-workers and ESO for their kind expressions of sympathy during the recent loss of my father Jose. **Manny Mauricio**

My family and I wish to express our sincere thanks to my coworkers and ESO for their kind expressions of sympathy during the recent loss of my mother. **Anthony Biagiotti**

My family and I wish to express our sincere thanks to all our friends at Grumman and ESO for their kind expressions of sympathy during the recent loss of my mother. **Eddie Harrigan**

My family and I wish to extend our sincere thanks and appreciation to all our friends, co-workers and ESO for their kind expressions of sympathy during the recent loss of my father. **Mario A. Scavuzzo**

My family and I wish to express our sincere thanks and appreciation for the thoughtfulness expressed by friends, coworkers and ESO during the recent loss of my father. **Frank Intrieri**

My family and I would like to express our sincere thanks to all our friends for the thoughtfulness expressed during the recent loss of my mother. **John Lenahan**

To all our friends, co-workers and ESO, my family and I are greatful for your kind words, support and sympathy following the loss of my husband. Frank's friends and all of Grumman are my strength. **Jean Pyzanowski**

Next Issue:
July 25

Waste Not, Want Not

Grumman Scrap Yard Turns Trash Into Treasure

Al Mead's blood boils when he visits his town dump and sees what people get rid of.

Mead is Grumman's resident expert on junk. He is manager of Building 12 in Bethpage, L.I., and the Grumman representative for the National Association of Manufacturers (NAM) Nonfuel Task Force, which promotes recycling and waste prevention.

On a hot, muggy day recently, Mead strolled around the 150,000-square-foot Grumman scrap yard, near Building 3 in Bethpage. Selecting pieces of scrap out of the heap, he handed them to a visitor as if they were gold.

"Grumman is helping Uncle Sam by selling its scrap for recycling. In addition to the fact that there is a serious shortage of minerals and ores, it's cheaper to recycle metal than to produce it from scratch," Mead explains.

Although it may look like it was hit by a tornado, the scrap yard is actually quite organized. Each different type of metal occupies a separate yellow bin. Glistening in the sunlight, the metal awaits its next destination — the scrap dealer.

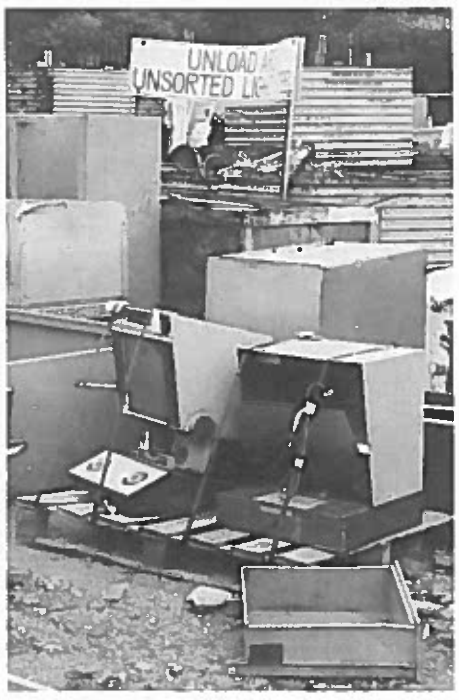
While competition is stiff in the scrap-selling business, presorting gives Grumman an advantage over other sellers. "Time is money," Mead says.

Three times a week, scrap metal is collected and is then sorted on a long table at the scrap yard. Outdated machinery, with no resale value, is cut up.

Unknown metals can be identified with the aid of a grinder. For example, aluminium does not spark when put in the grinder, while stainless steel gives off a bright orange flame. In addition, a magnet can be used — it will stick to iron but not to titanium.

Although few materials are toxic or highly flammable, everyone who works in the yard is required to wear protective gloves and goggles. "We've only had a few minor scratches over the years from handling sharp metals," says Joe Brennan, supervisor of property disposition and salvage operations for the Material Management Department.

The Telltale Spark. *With a grinder, John Pagano determines that this piece of metal is aluminum — it gives off no sparks; titanium gives off orange sparks. Scrap is dumped onto this table in the warehouse. After the metals are sorted and put in large bins, their next home is the scrap yard.*



Metal Shopping Arena. *If you're looking for a particular type of metal, the Grumman scrap yard is the place to find it. (Photos by Jim Wagner)*

The best-seller for scrap: aluminum. Grumman sells an average of 120,000 pounds of aluminum a month to scrap dealers.

Another popular seller is copper wire. "Relay boxes from old electrical units are just about useless for resale," Brennan says, "but the copper wire taken out of them is profitable. I recently sold 50,000 pounds, accumulated over five months, for $14,000 to a scrap dealer. Copper wire is also taken from aircraft harnesses.

"Some scrap dealers buy mixed metals. We sell about 40,000 pounds every six months to them," Brennan adds.

Some of the scrap metal isn't resold. It's sometimes reused in other Grumman non-production departments as a cost savings; the scrap yard serves as a holding area for these materials. Assemblies may be broken down into their components, such as casters, wheels, rollers, motors, or wire, which are offered to any department that needs them.

And junk doesn't just encompass metals. "IBM printouts are picked up twice a week at all Grumman Data Systems buildings," says Brennan. "Holtsville, Buildings 30, 35 and 2 bring in the most printouts — about 3,000 pounds a week each. Printouts are also picked up at other Grumman Long Island locations, including Melville, Great River, and Bohemia. It all gets sold in bulk to paper recyclers."

All government-contracted items bearing precious metals are returned to the Federal government for recycling. Government scrap is picked up in Bethpage and Calverton, L.I., only. Grumman saves Uncle Sam $30,000 to $50,000 annually in precious metals.

Being in the "junk business" pays off, Brennan adds. "The savings for Grumman from selling scrap and paper has been about $1.2 million per year," he says.

And there's an even bigger picture to saving scrap metal. "There is now a serious shortage of strategic minerals in the national defense stockpile," Mead says. "Those are minerals needed to supply military, industrial, and civilian requirements during a national emergency. The stockpile contains a total of 93 individual materials.

"As producers of F-14s, E-2Cs, and other systems, we must have the raw materials when we need them to support our nation. That's why we're in business," Mead says.

For example, an F-14 is about 50 percent aluminum and 14 percent steel. An E-2C is almost all aluminum. Titanium, a precious metal, is used for aircraft wings, inlet ducts, and certain engine parts.

Steel, aluminum, and titanium are all 'way up there on the stockpile list.

"Look what happened during World War II," Mead says. "There was a shortage of nickel and other critical minerals. We lost over 10 liberty ships and oil tankers because of brittle failure problems. They actually split in two. During the Korean War, when a new alloy was introduced in order to reduce a critical material shortage, many of the tank gears cracked."

Every material is crucial, Mead adds. "Through our salvage operation, Grumman turns its junk into valuable materials," he says. "In the long run, that means there's less of a demand on our nation's mineral resources — and more of those resources to go around tomorrow."■

Retirees

On behalf of our fellow workers, *Grumman World* salutes the following Grummanites for their contributions to the company and wishes them well in their retirement. Those who have recently retired are:

Billie R. Brown (6), Bertrand F. Dolan (30), Milton Lichaw (25), Joseph Ciezkowski (43), Robert F. King (2), Alfred J. Rehwinkel (111), Vincent J. Dunn (30), Alphonse Liguori (3), George K. Menasian (112), Edwin J. Brooks (3), Vivian M. Angoli (30), Carl J. Camarda (43), John A. Forestiero (30), Francis X. Crane (237), Andrew R. Baldo (2), Julius E. Matera (3), Marvin C. Weil (4), Russell Hosie (43), John Kovel (2), Doris R. Keena (25), Anthony Antongeorgi (7), Clifford T. Wulff (2), Barbara J. Stobie (40), Salvatore S. Trezza (43), Reinaldo Gonzalez (7), Louise VanEtten (30), Melvin Gilmore (2), William C. Schultze (7).

Warren H. Stalker (2), Erma M. Duryea (2), Alfred F. Calucci (39), Rosina F. Fortgang (35), George Manganis (12), George F. Serviss III (1), Mario S. Martire (4), Peter Chaldaris (4), Ernest J. Anzalone (4), Robert Brummer (1), Robert S. Gerard Jr. (1), Michael Proko (8), Robert M. Benning (25), Lloyd C. Proctor (77), Walter V. Muller (5), Alan P. Frost (3), George R. VanNess Jr. (25), Matthew J. Heaphy (2), David S. Komives (5), Viola Drinkwater (111), Frank Psotta (3), Alexander J. Williams (47), Irving C. Stiles (5), Andrew Caleca (6), John Polman (1), Agush Gurga (14), Stephen Focardi (1), Edward Whitley (3), Gerard E. Miller (2), Evelyn A. Gallacher (30), Vito R. LaRocca (6).

GrummanWorld
July 11, 1986

Muscular Maneuvers

As part of a TRW-led team, Grumman Space Systems will help build the Orbital Maneuvering Vehicle (top R). This space tug will be used in the construction of the Space Station (shown above). The OMV will also be the main means of moving satellites and platforms to and from the Space Station. See story on page 1.

Letters

Dear Editor,

While staying with my father, Walter P. Bock, recently, we read *Grumman World*. Dad commented that he wondered if anyone who retired when he did is still alive.

My father will be 91 this month. His health still allows him to be active and he does all the necessary chores around his home without help — my mother passed away in 1970. Dad worked in old Plant 3 in Bethpage. He retired at age 65 on December 30, 1960.

Dad sends his regards to any retiree who may remember him. His address is: 2073 SE Lafayette St., Stuart, Florida 33494.

Sincerely,
Walter W. Bock

Happy 91st, Walter! We did some checking and discovered that you are a youngster in the Grumman retiree crowd. Honors for being the oldest retiree go to Antoni Wrobel of Port Washington, N.Y. He turned 98 in March. Best of health to both of you.

Let Us Know

We'd like to know what you think about the things you see in these pages, and what you see going on in the company. Serious comments, questions and complaints are welcomed, and will be answered by the people most qualified to respond. We'll get back to you promptly with their replies. If the topic is of general interest, we'll print it.

Letters to the editor should be addressed to *Grumman World*, 1111 Stewart Avenue, A22-GHQ, Bethpage, N.Y. 11714, and should include your name and address. Letters may be edited for clarity or space.

Picnic Tix On Sale At All ES Offices

On Saturday, July 26, thousands of Grummanites and their families will gather at Calverton for the 45th Annual Family Picnic.

Tickets for this popular company event are now on sale at all Employee Services' Flight Shops. Admission is $5 per person; children under the age of 12 are admitted free. There will be no tickets sold at the gate.

Because of the increased number of non-Grummanites attending the picnic in past years, a new rule went into effect last year. "No car is permitted in the picnic gate without someone showing a Grumman badge first," says Chet Baumgartner, director of Employee Services.

Though the gates open at 8:30 in the morning, the picnic officially begins at the 10 o'clock flag-raising ceremony and ends at 3 p.m.

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